Space Solar Power Concept Technology Maturation
Technical Interchange Meeting
Glenn Research Center, Cleveland OH
September 10-12, 2002

Output from Working Group Session: Robotics

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- The past few years have seen technology development and new technologies emerge which could have an impact on reaching the goals of SSP.
- List the technologies which may have the possibility to achieve the goals of SSP. These technologies must have **revolutionary** potential and address one or more of the following characteristics:
  - Significant mass reduction
  - Dramatically improve efficiency
  - Considerable cost reduction
  - Reliability and longevity improvements
  - Ability to withstand operating environments

Output from Working Group Session: Robotics

List of Revolutionary (?) Technologies:
1) Self Reconfigurable Robots
2) Ability to ‘walk softly’
3) Advances in cooperative systems
4) Improvements in mechanisms and dexterity

Output from Working Group Session: Robotics

- Detailed description and assessment of technologies from Table 1. List the impact to the SSP goals and the other related technologies:
  1) Advances in robotics have been mostly evolutionary. Progress has been made in areas that are relevant to SSP, but comparatively little has been focused on on-orbit assembly activities.
  2) Self-reconfigurable robots offer very interesting possibilities for increasing flexibility of the assembly infrastructure
  3) Cooperative robotics work to date shows promise, but needs to be scaled up significantly (from two or three agents to hundreds of agents working together).

Output from Working Group Session: Robotics

Consensus on the future direction of research and development to solve the challenges of SSP:

Near Term:

- Need more work on robotic mobility and control approaches for very large scale systems
- Need to improve flexibility and reliability of robotic systems
- Need better integration between structures community and robotics community. Robotic assembly and structural design will have to go hand in hand.
- Structures have to provide appropriate infrastructure for robotics; e.g. force damping

Far Term:

- Need more work on cooperative systems, particularly large scale cooperation between autonomous, intelligent agents